

Developing a Deeper Understanding of 21st Century Skills

Adapted from Intel Teach Getting Started Enhancement Workshop Manual

Step 1: Making Connections

- Read the scenario assigned to your group. (Appendix A - 21st Century Workplace Scenarios)
- Discuss what is happening.
- Infer the skills that would be required to carry out the tasks depicted. (Appendix B - 21st Century Skills)
- Write out the skills and post them on the chart paper.

Step 2: Group Discussion

- Select one skill at a time and discuss in depth:
 - *Why it is an important skill for the 21st century workplace?*
- Rank the skills in order of what can be facilitated in the classroom.

Step 3: Group Share

- Share the top five skills selected.
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21st Century Workplace Scenarios

(Adapted from document on the website- <http://wdr.doleta.gov/SCANS/whatwork/> and Intel Teach Enhancement Workshop Manual)

Scenario – 1

Health Services

Mary is the Chief Reception Manager in the emergency room of City Hospital, a large public Hospital in New Delhi serving a diverse, urban population. She is the first person patients meet when they enter the hospital. Stress in the emergency room is tangible¹, particularly on weekends. Residents of nearby low-income neighborhoods use the facility for routine health care; accident victims from all over the area are frequently brought to the hospital; this combination threatens to overwhelm the emergency room on weekends. On a Friday evening, the emergency room staff is just recovering from a very difficult afternoon. Seven children, injured when their school bus was hit by a delivery van, were brought to the emergency room between 3:30 and 4:00 p.m. As Mary takes a breather, at that very moment, a distraught mother arrives with her teenage daughter who is wheezing, clearly in severe respiratory distress. Mary turns her attention to the mother and daughter only to find that speaks neither English nor Hindi. The girl is choking; the mother unable to make herself understood becomes hysterical and says they speak only Tamil. Mansoor, a Registered Nurse (RN) who hears the commotion, arrives and takes the girl to an examining room. As the RN leaves he instructs Mary to get a duty doctor and an interpreter.

Mary locates Dr. Anjlee in the next room and asks her to come to the examining room. Next, she calls the Community Affairs office and gets an interpreter on the phone with the mother and herself. The interpreter informs Mary that the girl is asthmatic and that she has been treated at the hospital before. Mary smiles at the mother to reassure her that everything is under control and goes to her computer terminal to locate the daughter's hospital records. Mary hands a copy of the records to Dr. Anjlee who completes the examination of the girl and prescribes medication to relieve her distress.

¹ Tangible = Real/Concrete

Scenario – 2

Manufacturing

Kareem is an electronics specialist working as an electrician in a newly designed "Big Three" Automobile Assembly Plant (AAP) in Mumbai.

The plant is a state-of-the-art production facility employing 2,900 hourly workers. About two years ago, assembly line automation was completed with the selection and installation of a new robotics painting system. Kareem was involved in the selection of this equipment, which Nasreen, the procurement specialist in the engineering department chose with advice from line workers.

But a pressing issue developed on the operating line: how to train people to properly use, maintain, and troubleshoot the system.

The vendor for the painting system had provided initial training in the system's programmable logic. But, after the vendor left, Kareem found himself frequently on-call to troubleshoot the problems of the new system because the other shop electricians were not able to maintain it. The other electricians, who had been hired from an older AAP plant on the basis of seniority, were what are called "pipe, wire, and relay" electricians who had a difficult time making the transition to electronics concepts. It appeared that while the vendor had provided solid training in generalized troubleshooting, they had not provided sufficient training in how to troubleshoot the system when integrated into an automotive plant.

Kareem worked with the head of high technology training at AAP and the vendor to revise the training to emphasize a broad array of maintenance skills needed on the line. The goal, in part, was to reduce the costs associated with repeated calls for assistance from the vendor.

The course work, which was taught by Kareem, included a review of basic electrical theory and training in basic electronics concepts. It also included work in pneumatics and hydraulics. It heavily emphasized the use of computer with on-the-floor simulations of equipment operation. One result of this ongoing training is a more confident team of electricians who can provide immediate assistance to the line. Another is equally impressive - system downtime has been reduced by 22 percent at AAP.

Scenario – 3

Office Services

WorldScribe Technologies Limited (WSTL) is a Business Process Outsourcing (BPO) company that provides the industry's fastest and most comprehensive written records of meetings, legal proceedings, and conferences. The firm employs 24 people, including six transcribers, but today only four of the transcribers are available. The transcriber's job is to decipher tapes received from stenographers and recorders and create a written record. Accuracy and timeliness are critical elements of the transcriber's work which under girds the firm's success.

Nisha is a top-notch transcriber at WSTL. This has been a particularly busy week, and today she has six tapes in various stages of conversation. Three of the clients have asked for their documentation by the following morning. One law firm has a court case approaching. The minutes of a controversial school board budget hearing are to be delivered to the local newspaper tomorrow for publication the following day and the president of a local university (one of WSTL's largest clients) wants immediate service on the tapes of a book she is dictating, regardless of how many other clients are inconvenienced. Nisha doesn't think she can finish all the tapes on time and goes to Thomas, her supervisor, to discuss the problem and possible solutions. She and Thomas decide to call in a freelance transcriber they have hired previously to work with legal clients. Nisha then calls the school board president and the local newspaper. She arranges to have the minutes reviewed that evening by school board staff so that she can make corrections and deliver them to the newspaper by the editor's "drop-dead" deadline. She is able to reach the university president with whom she discusses her time constraints and negotiates a reprieve. Nisha works out a schedule whereby she will have the president's transcript ready two days later by 4:00 p.m. After finishing her scheduled daily work, Nisha looks over the first draft of a new transcriber hired to work exclusively with a local teaching hospital to determine if his knowledge of medical terms is adequate. Otherwise, he will be sent to a specialized training course. Nisha tells Thomas that, in her opinion, they have hired the right person and no further training is needed.

Scenario 4

Accommodations and Food Services

Ram, Sham, and Anthony came to know each other at Delhi University campus while they were students. Now, all the three are on the verge of realizing an entrepreneurial dream of opening their own restaurant - The Three Chefs - in the growing Gurgaon.

Before coming to this point all the three were working hard by independently spending more than 10 years just to learn the nitty-gritty of the restaurant business, pooling their savings, and borrowing from friends and family to raise the start-up capital they needed. Ram even took out a second mortgage on his home to satisfy the local bank's demand for security on a line of credit. Ram serves as manager and "front-of-the house"² shift supervisor during the day. Sham is the lunchtime chef and evening manager.

Anthony trains the staff, does the bookkeeping, and prepares the evening meals. Renovation has been completed on the restaurant, and most of the new kitchen equipment has been installed. Waiters and waitresses have completed their training and have worked two practice shifts to iron out³ problems.

Sham and Anthony analyzed the "back-of-the-house"⁴ workflow during the practice shifts and developed a plan for improving the kitchen's output.

They can improve efficiency in the kitchen by almost 20 percent by starting food preparation an hour early and moving one of the work stations to the front of the house. After some discussion, the three of them realized that although the repositioning makes sense, it would probably cost them between Rs 20,000 and Rs 30,000, which they do not have. If their projections are correct, they might be able to afford it after they have made about Rs 3,50,000 in sales, i.e., in three to four months, if all goes well.

They opt to make minor adjustments to the system and refrain from expensive changes until they have seen how the first month's sales and expenses look. "Here's another way we can control our costs," says Sham. "I've come across a new management information system that can generate inventory reports, sales reports, and pricing charts. We can integrate the inventory reports and pricing data to project cost and make menu changes. I've also been looking at several different accounting software packages. I think the software our accountant recommended is the most suitable for our needs. There is a large pool of programmers who know that software, making it easier for us to obtain a consultant on short notice to tailor it to our operation."

² Front of the house = areas of a restaurant that is open for public or for public view like lobby and dining room.

³ Iron out = solve, agree, work out or sort out.

⁴ Back of the house = kitchen, and kitchen staff.

Scenario – 5

Textile Industry

Temsek Textile Corporation (Singapore) buys 14% stake in Well-Spun India (Cochin, Kerala State, India), a Textile & Apparel industry major in India. The deal was finalized in Cochin last month. This was a good move for both the organizations: First, Well-Spun was trying to enter the European & Asia Pacific Market, which was achieved, as Temsek has a well-established network and brand name in Europe & Asia Pacific. Second, Temsek Textile Corporation was trying to be cost-effective to compete with its competitors, and this was achieved as Well-Spun India was producing Textile & Apparel at much lesser cost.

Well-Spun India has to send the cargo shipment to Singapore from Cochin harbor tomorrow. But in Kerala (a South Indian State where Well-Spun India is situated) the opposition party (Political party) has called a one-day strike (tomorrow will be the strike) as the government is planning to privatize the harbors used for commercial purpose. But the caveat⁵ is that they decide to go on strike at 4.30 pm (IST) (they make this decision one day prior to the strike]. The labor unions would be participating including the employees at the Cochin harbor.

Now, tomorrow as the shipment cannot be sent to Singapore from Cochin, there will be a problem because from Singapore, the cargo should be repackaged and sent to Germany in two days. Thus, the Logistics Manager has the dual responsible role that the information reaches both Singapore and German offices.

The Logistics Manager in India, who is proofreading Q2 report of his department that has to be sent by today evening, now has to inform the Singapore office that the shipment will be delayed. And he should do in 30 minutes, as he gets to know about the strike at 5.00 pm (IST) and the office in Singapore would close at 5.30 (IST). But when he calls the logistics department of Singapore office, he finds that the other person receiving the call cannot speak English.

Now the time is 5.06 (IST). The Logistics Manager has just 24 minutes to convey it to Singapore. This makes him feel the stress.

To inform the offshore office at Germany, there are still 4 more hours as Germany is at the west.

⁵ Caveat = caution

The Logistics Manager thinks about: how to get across the message that is very important because the same message should be sent to Germany too as early as possible as clients would be waiting for the shipment all across Europe.

He now tries to find out someone who speaks Chinese in his office – but finds none. He takes deep breath, looks on the table for his half-finished coffee, and takes few sips. He glances on his computer monitor, sees the document that he was proofreading and he starts to proofread, and glances at his watch he has just 19 minutes to inform the Singapore office. Without panicking he is thinking how to inform and even proofreading in a slow but steady pace. Now quickly he remembers that Mr. Martin Scepanek from Slovakia who works at the Singapore office had visited Cochin during Temsek Textile Corporation and Well-Spun India deal. The Indian Logistics Manager had spent some time talking with the lively Mr. Scepanek and moreover, Mr. Scepanek can speak German.

So, without wasting time, he contacts Mr. Scepanek, informs him about the situation, and requests him to convey the same in his office and to the offshore office in Germany.

He now continues to proofread and finishes it in time

Appendix – B

21st Century Skills

(Source: <http://www.ncrel.org/engage/skills/skills.htm>)

Digital-Age Literacy

Basic Literacy: Language proficiency (in English) and numeracy at levels necessary to function on the job and in society to achieve one's goals and to develop one's knowledge and potential in this Digital Age.

Scientific Literacy: Knowledge and understanding of the scientific concepts and processes required for personal decision making, participation in civic and cultural affairs, and economic productivity.

Economic Literacy: The ability to identify economic problems, alternatives, costs, and benefits; analyze the incentives at work in economic situations; examine the consequences of changes in economic conditions and public policies; collect and organize economic evidence; and weigh costs against benefits.

Technological Literacy: Knowledge about what technology is, how it works, what purposes it can serve, and how it can be used efficiently and effectively to achieve specific goals.

Visual Literacy: The ability to interpret, use, appreciate, and create images and video using both conventional and 21st century media in ways to enhance thinking, decision making, communication, and learning.

Information literacy: The ability to evaluate information across a range of media; recognize when information is needed; locate, synthesize, and use information effectively; and accomplish these functions using technology, communication networks, and electronic resources.

Multicultural Literacy: The ability to understand and appreciate the similarities and differences in the customs, values, and beliefs of one's own culture and the cultures of others.

Global Awareness: The recognition and understanding of the interrelationship among international organizations, nation-states, public and private economic entities, sociocultural groups, and individuals across the globe.

Inventive Thinking

Adaptability and Managing Complexity: The ability to modify one's thinking, attitude, or behavior to be better suited to current or future environments; and the ability to handle multiple goals, tasks, and inputs, while understanding and adhering to constraints of time, resources, and systems (e.g., organizational, technological).

Self-Direction: The ability to set goals related to learning, plan for the achievement of those goals, independently manage time and effort, and independently assess the quality of learning and any products that result from the learning experience.

Curiosity: The desire to know or the spark of interest that leads to inquiry.

Creativity: The act of bringing something into existence that is genuinely new and original, whether personally (original only to the individual) or culturally (where the work adds significantly to a domain of culture as recognized by experts).

Risk Taking: The willingness to take risks without being cowed down by mistakes. Advocate unconventional or unpopular positions, or tackle extremely challenging problems without obvious solutions, such that one's personal growth, integrity, or accomplishments are enhanced.

Higher-Order Thinking and Sound Reasoning: The cognitive processes of analysis, comparison, inference and interpretation, evaluation, and synthesis applied to a range of academic domains and problem-solving contexts.

Effective Communication

Teaming and Collaboration: Cooperative interactions between two or more individuals working together to solve problems, create novel products, or learn and master content.

Interpersonal Skills: The ability to read and manage emotions, motivations, and behaviors of oneself and others during social interactions or in a social-interactive context.

Personal Responsibility: Depth and currency of knowledge about legal and ethical issues related to technology, combined with one's ability to apply this knowledge to achieve balance, integrity, and quality of life as a citizen, a family and community member, a learner, and a worker.

Social and Civic Responsibility: The ability to manage technology and govern its use in a way that promotes public good and protects society, the environment, and democratic ideals.

Interactive Communication: The generation of meaning through exchanges using a range of contemporary tools, transmissions, and processes.

High Productivity

High productivity currently is not a high-stakes focus of schools, yet the skills involved in this cluster often determine whether a person succeeds or fails in the workforce:

Prioritizing, Planning, and Managing for Results: The ability to organize to efficiently achieve the goals of a specific project or problem.

Effective Use of Real-World Tools: The ability to use real-world tools—the hardware, software, networking, and peripheral devices used by information technology (IT) workers to accomplish 21st century work—to communicate, collaborate, solve problems, and accomplish tasks.

Ability to Produce Relevant, High-Quality Products: The ability to produce intellectual, informational, or material products that serve authentic purposes and occur as a result of students using real-world tools to solve or communicate about real-world problems. These products include persuasive communications in any media (print, video, the Web, verbal presentation), synthesis of resources into more useable forms (databases, graphics, simulations), or refinement of questions that build upon what is known to advance one's own and others' understanding.

Essential 21st Century Skills⁶

Learning and Innovation Skills

Creativity and Innovation

- Demonstrating originality and inventiveness in work
- Developing, implementing and communicating new ideas to others
- Being open and responsive to new and diverse perspectives
- Acting on creative ideas to make a tangible and useful contribution to the domain in which the innovation occurs

Critical Thinking and Problem Solving

⁶ Source: Partnership for 21st Century Skills (www.21stcenturyskills.org).

- Exercising sound reasoning in understanding
- Making complex choices and decisions
- Understanding the interconnections among systems
- Identifying and asking significant questions that clarify various points of view and lead to better solutions
- Framing, analyzing and synthesizing information in order to solve problems and answer questions

Communication and Collaboration

- Articulating thoughts and ideas clearly and effectively through speaking and writing
- Demonstrating ability to work effectively with diverse teams
- Exercising flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal
- Assuming shared responsibility for collaborative work

Information, Media and Technology Skills

Information Literacy

- Accessing information efficiently and effectively, evaluating information critically and competently and using information accurately and creatively for the issue or problem at hand
- Possessing a fundamental understanding of the ethical/legal issues surrounding the access and use of information

Media Literacy

- Understanding how media messages are constructed, for what purposes and using which tools, characteristics and conventions.
 - Examining how individuals interpret messages differently, how values and points of view are included or excluded and how media can influence beliefs and behaviors.
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- Possessing a fundamental understanding of the ethical/legal issues surrounding the access and use of information

ICT (Information, Communications and Technology) Literacy

- Using digital technology, communication tools and/or networks appropriately to access, manage, integrate, evaluate, and create information in order to function in a knowledge economy
- Using technology as a tool to research, organize, evaluate and communicate information, and the possession of a fundamental understanding of the ethical/legal issues surrounding the access and use of information

Life and Career Skills

Flexibility and Adaptability

- Adapting to varied roles and responsibilities
- Working effectively in a climate of ambiguity and changing priorities

Initiative and Self-Direction

- Monitoring one's own understanding and learning needs
 - Going beyond basic mastery of skills and/or curriculum to explore and expand one's own learning and opportunities to gain expertise
 - Demonstrating initiative to advance skill levels towards a professional level
 - Defining, prioritizing and completing tasks without direct oversight
 - Utilizing time efficiently and managing workload
-